
Organisation

The MA12003 module runs for 11 teaching weeks in the second semester, and is worth 20 SCQF credits (equal to 10 ECTS points).

All organisation and teaching will be carried out by

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The Module Leader is Dr Dodds. You should make an appointment to see Dr Dodds if you have a problem regarding the course. You may also bring matters of concern about the course to the attention of the Mathematics Division Staff/Student Committee, which meets once each semester. A volunteer from Level 1 Mathematics will act as class representative to sit on the Staff–Student Committee; their name will be posted on BlackBoard.

This module involves 200 hours of student effort, including 44 contact hours.

Timetable

The weekly timetable for the module consists of four 50 minute classes, typically 2 lectures, 1 workshops and 1 computer lab.

Pre-requisite

In order to take this course you must have a C at higher mathematics, or an equivalent qualification.

Note: You may not take this course if you have previously passed or are currently taking AB12007 or MA22003.

Syllabus

Data Analysis  (1 week)
   Populations and samples; types of data.
   Data presentation.
   Mean; standard deviation.
   Interpretation of data.

Probability  (2 weeks)
   Selection problems.
   Sample space; events; compound events; complements.
   Addition rules.
   Conditional Probability; the multiplication rule; independence.
   Bayes’ Theorem.
Discrete Random Variables  (3 weeks)
Probability distribution.
Probability mass functions (Uniform, binomial, geometric, Poisson distributions).
Joint probability mass functions; covariance and independence.
Expected value and variance of sums of random variables.

Continuous Random Variables  (2 weeks)
Polynomial and negative exponential probability density functions.
The Normal distribution and tables.
Expected value and variance of continuous random variables.
Sums and differences of independent normal random variables.
The central limit theorem; Normal approximations.
Random samples.

Hypothesis Testing  (2 weeks)
Hypothesis formulation.
Test statistics.
\( p\)-values.
Confidence intervals.

Linear Regression  (1 week)
Least squares.
Assessing usefulness of a model.
Using a model.

Assessment
The overall assessment will be weighted 50% for Coursework and 50% for a two-hour unseen Degree Examination. The exam will be held in the April/May examination diet. The Coursework will consist of class tests, homeworks and computer lab reports. The assessment weightings are shown in the table below:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
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<tbody>
<tr>
<td>Class Tests</td>
<td>30%</td>
</tr>
<tr>
<td>Homeworks</td>
<td>10%</td>
</tr>
<tr>
<td>Laboratory Reports</td>
<td>10%</td>
</tr>
<tr>
<td>Degree Examination</td>
<td>50%</td>
</tr>
</tbody>
</table>

Assignment deadlines as well as Class Test dates will be posted on MyDundee and announcements made in the class hours.

To pass this module in April/May it is necessary to gain at least 40% in the overall assessment and obtain at least 35% in the Degree Examination. and obtain at least 35% overall in the Class Tests. and obtain at least 35% overall in the Homeworks. and obtain at least 35% overall in the Lab Reports.

For those who fail the module due to a low exam mark in December there will be a two-hour resit examination paper at the July Examination diet. To pass this module in July it is usually necessary to gain at least 40% in the July Examination.
Your Commitment

You should attend all classes except on medical grounds or with the special permission of the lecturer concerned. If you are unable to attend the degree examination or complete elements of the coursework on time then you should inform the Module Leader and submit a medical certificate. Medical certificates should be submitted to your School Office as soon as possible after the absence.

**You must also submit a Mitigating Circumstances form to explain which aspects of assessment have been affected by your absence.**

A Medical Certificate will not be taken into account unless a Mitigating Circumstances form that refers to the medical certificate has also been completed.

Approved Calculators

The only types of calculators that have been approved for use in assessments in the School of Engineering, Physics and Mathematics are the Casio FX83 and the Casio FX85.

Study Support

If you are having difficulty with the course you are encouraged to seek help at an early stage by making an appointment to see your lecturer. You may also obtain additional help from the Maths Base (see BlackBoard for details).

Feedback

At the end of each section of the module you will be asked to complete a confidential questionnaire regarding the content and presentation of the module. This is an important element in the University’s Academic Standards procedures.

Recommended Books

You will find many introductory statistics books in the library. An example is *Introductory Statistics* by N.A. Weiss.